

School Accountability, Underfunding, and Inefficiency

Findings in Brief

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Study Overview

Accountability Theory and Policy Background

Broadly speaking, from a theory of economic production, there are two drivers in the production of output – inputs and efficiency (Hanushek, 1986). Applying this concept to education, where the outputs being produced are student outcomes, there are two general ways in which outcomes can be improved: (a) more efficient use of resources (funding or the staff and non-personnel purchased with this funding); and (b) increasing the quantity and/or quality of resources. The accountability theory of action works from a similar premise: that education outcomes can be improved through a combination of (a) increased efficiency of resource use and (b) additional resources (Ladd, 1996).

Despite evidence that federal accountability policy has budged the needle on student outcomes (e.g., Dee & Jacob 2011), accountability policy has not led to the widespread improvement that its advocates had hoped for (Spurrier et al., 2020). One possible reason that accountability policies have not lived up to expectations is their overreliance on improvement through increased efficiency and a failure to provide sufficient resources to implement the strategies and interventions necessary to improve low-performing schools.

The language of the Every Student Succeeds Act of 2015 (ESSA), the most recent version of federal policy regarding elementary and secondary education, places more emphasis on providing schools with supports and addressing resource inequities compared to its predecessor, the No Child Left Behind Act of 2002 (NCLB). As such, there was an effort to reframe federal accountability as something other than punitive and de-emphasize the consequences (Le Floch et al., 2024). ESSA required that states identify underperforming schools in the following accountability designation categories:

- Comprehensive Support and Improvement (CSI): The lowest performing 5% of schools. Schools must develop improvement plans guided by a needs assessment; but few requirements are in place in terms of how schools must intervene other than that they implement at least one “evidence-based” intervention.
- Targeted support and improvement (TSI) or additional targeted support and improvement (ATSI): Schools with consistently underperforming or low-performing student groups. Few requirements on these schools other than they implement an improvement plan.

By design, ESSA focused school improvement efforts on a smaller set of the lowest performing schools compared with NCLB (Le Floch et al., 2024), with the intent that state and local education agencies would be able to concentrate limited capacity and resources on relatively few very high-need schools.

ESSA included several other features signaling the intent to provide additional resources to schools identified for improvement:

- At least 7% of Title I, Part A funding (Section 1003(a) funding) must be set aside to support school improvement in schools identified under the federal accountability system.
- Resource allocation reviews within districts, including that states conduct resource allocation reviews within districts with significant numbers of schools identified for improvement under federal accountability and that districts with CSI schools identify and address resource inequities within their districts.

Research Questions and Study Context

Given the emphasis of accountability policy on both efficiency and providing additional resources and supports, we have conducted a series of analyses examining the resources provided to schools identified as low performing under ESSA (with an emphasis on CSI schools) and the efficiency with which outcomes are produced these schools. The following research questions (RQs) define our objectives of our analyses:

- RQ1: How do student outcomes and student demographics of CSI and TSI/ATSI schools compare to non-identified schools?
- RQ2: To what extent do CSI and TSI/ATSI schools receive additional funding and spend more than non-identified schools?
- RQ3: How much additional funding would be required to support meaningful gains in student performance in schools identified for improvement?
- RQ4: To what extent is poor performance in schools identified for improvement the result of inadequate resources versus inefficient use of existing resources?

Our study uses the state of Ohio as a case study. Ohio is a compelling case study as it is diverse racially, socioeconomically, and geographically, with high-need districts and schools in both urban and more rural areas. In addition, Ohio's current level of spending on education is on par with the national average (National Center for Education Statistics, 2023) and Ohio uses an index-based approach to identifying low-performing schools, similar to most states.

Summary of Key Findings

Highlighted key findings are as follows:

- CSI schools face substantial challenges in student performance and serve disproportionately high-need student populations.
- The additional funding and spending in CSI schools is relatively small – around \$400 per pupil (or 2% of their spending).
- CSI schools do not receive enough funding to support meaningful improvement: CSI schools would need an additional \$10,000 per student, on average, to reach statewide average outcomes or an additional \$5,500 to meet a lower outcomes target.
- CSI schools are also relatively inefficient compared to non-designated schools, suggesting that there is room for improvement in how these schools use their resources.
- If CSI schools improved their level of efficiency to the statewide average, they would still be substantially underperforming compared to non-designated schools.
- CSI schools vary with respect to the extent to which inefficiency and underfunding contribute to their low performance.

The key findings suggest that both broad drivers of performance (efficiency and quantity/quality of inputs) should be addressed in CSI schools and that attempting to address efficiency without addressing the underfunding of these schools will likely result in limited and insufficient gains. Further, obtaining a better understanding of the degree to which inefficiency and underfunding contribute to the low performance of these schools identified for improvement can help technical assistance providers in states and districts tailor the types of supports and interventions for CSI schools.

This report is accompanied by a separate technical appendix, which includes text and figures that provide greater detail on the methodology and analysis.

Methodology

In Exhibit 1, we identify and describe the analyses associated with each research question. A list of the data we used in our analyses can be found in Appendix A. Additional detail on the regression analyses used in RQs 2, 3, and 4 can be found in Appendix B. Throughout the report we refer to years as the ending year of the fiscal year. For example, the year 2019 refers to the 2018-19 fiscal year. Collectively, our analyses cover the period between 2018 and 2023. During this time, there were two points in which new accountability designations were assigned – 2019

and 2023. For retrospective analyses examining change over time, we focus on the schools identified in 2019 and for analyses estimating funding needed for meaningful improvement and inefficiency, we focus on the 2023 cohort as it is more contemporary.

Exhibit 1. List and Description of Analyses Conducted

Research Question	Analysis	Description
RQ 1	Descriptive comparison of school characteristics and outcomes	Calculated the student-weighted average demographics and outcomes of schools by year and designation group. Compared the average demographics and outcomes of CSI and TSI/ATSI schools to the distribution of non-designated school performance.
RQ 2	Descriptive analysis of Section 1003(a) funding	Calculated the percentage of CSI and TSI/ATSI schools that received any Section 1003(a) funding within each year between 2019 and 2021. Calculated the average amount of Section 1003(a) funding per pupil that each designation category received in each year.
	School fixed-effects regression analysis of spending	Used a school fixed-effects regression model to compare trends in CSI school spending per pupil relative to non-designated school spending between 2018 and 2023. In addition to overall per-pupil spending, analysis disaggregated spending by function (e.g., instruction, pupil support, school administration).
RQ 3	Cost-function model of spending levels needed to reach outcome targets	Used a cost-function model to estimate the amount of per-pupil spending required for each school to meet two outcome targets: (a) the statewide average, and (b) 0.5 SDs below the statewide average.* The cost-function model accounts for outcomes, student demographics, geographic wage differences, grades served, school size, population density, and efficiency factors. Using predicted spending at each target level, we calculated the gaps in spending between actual and predicted spending to define the degree which schools were underfunded with respect to the target outcomes.
RQ 4	Efficiency regression model of school outcomes	Used a regression model, which includes the funding gap estimated by the cost-function model and school demographics and other characteristics to define each school's expected outcome levels. Defined efficiency as the difference between actual and expected outcomes.
	Descriptive comparative analysis of efficiency	Used descriptive analyses to examine the levels of efficiency in CSI and TSI/ATSI schools compared to non-designated schools. Decomposed the low performance of CSI and TSI/ATSI schools into the portion of performance outcomes attributable to underfunding and inefficiency.

Notes: *The lower performance level is approximately the 25th percentile of performance across all schools in the state. However, by designation, 92% of students in CSI schools, 48% of students in TSI schools, and 18% of students in non-designated schools (based on 2023 designations) attended schools that performed below this level.

Key Findings

Characteristics and Outcomes of ESSA Designated Schools (RQ1)

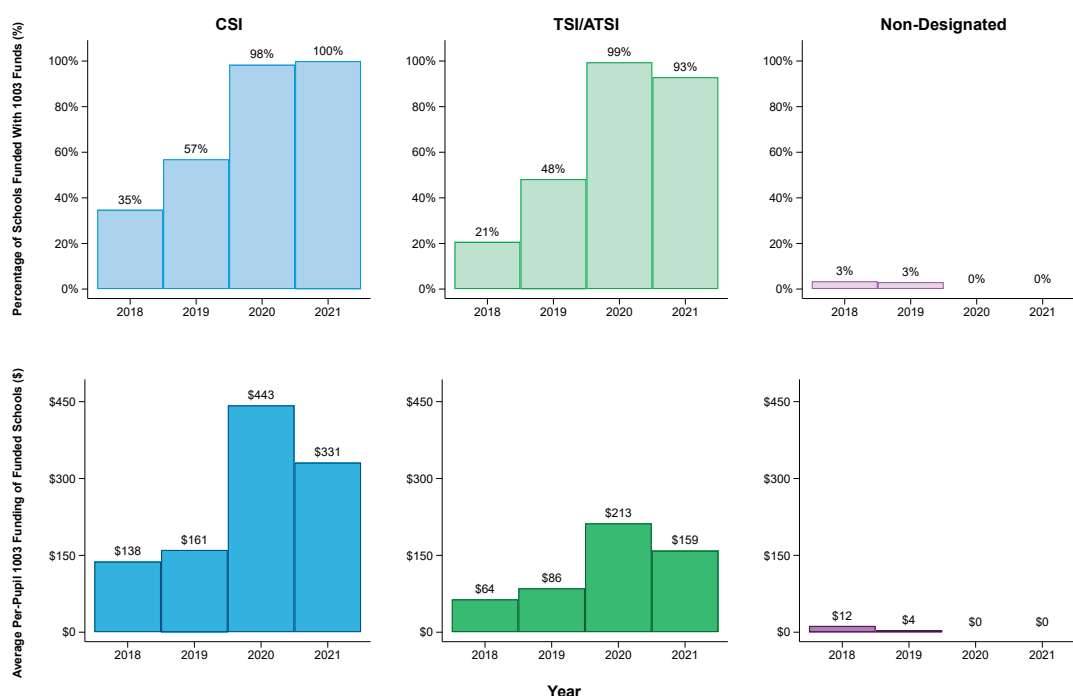
Students in CSI and TSI/ATSI schools are more often students of color, have disabilities, are English learners, and from low-income families. For example, the aggregate poverty rate of CSI schools in 2019 was 34% compared to a poverty rate of less than 15% for non-designated schools. The aggregate poverty rate for CSI schools in 2019 was at the 95th percentile of the non-designated school distribution. Trends were similar by disability and EL status and for students of color.

Student outcomes in CSI and TSI/ATSI schools are much lower than those in non-designated schools. On average, CSI schools score around 2 standard deviations (*SDs*) lower on ELA tests and 1.6 *SDs* lower on math tests compared to non-designated schools. Additionally, CSI schools have a 40 percentage point higher incidence of chronic absenteeism and a 43 percentage point lower graduation rate. These differences in performance place CSI schools, in aggregate, at around the 1st percentile of the non-designated school distribution. While TSI/ATSI schools also show lower student outcomes, the gaps are smaller than those between CSI and non-designated schools.

Section 1003(a) Funding and Spending in ESSA Designated Schools (RQ2)

Nearly all CSI and TSI/ATSI schools receive additional funding from Section 1003(a). Although there is a lag between when schools are identified and when they receive their Section 1003(a) funding, all CSI schools and almost all TSI/ATSI schools received additional funding by 2020 (Exhibit 2). In contrast, non-designated schools did not receive any additional federal funding from Section 1003(a) in 2020 and 2021. In addition to increases in the percentage of CSI and TSI/ATSI schools receiving funding, the amount of funding per pupil allocated to these schools also increased in 2020 and 2021 compared to 2019. In 2020 CSI schools received almost \$450 per-pupil in Section 1003(a) funding and TSI/ATSI schools received just over \$200 per-pupil.

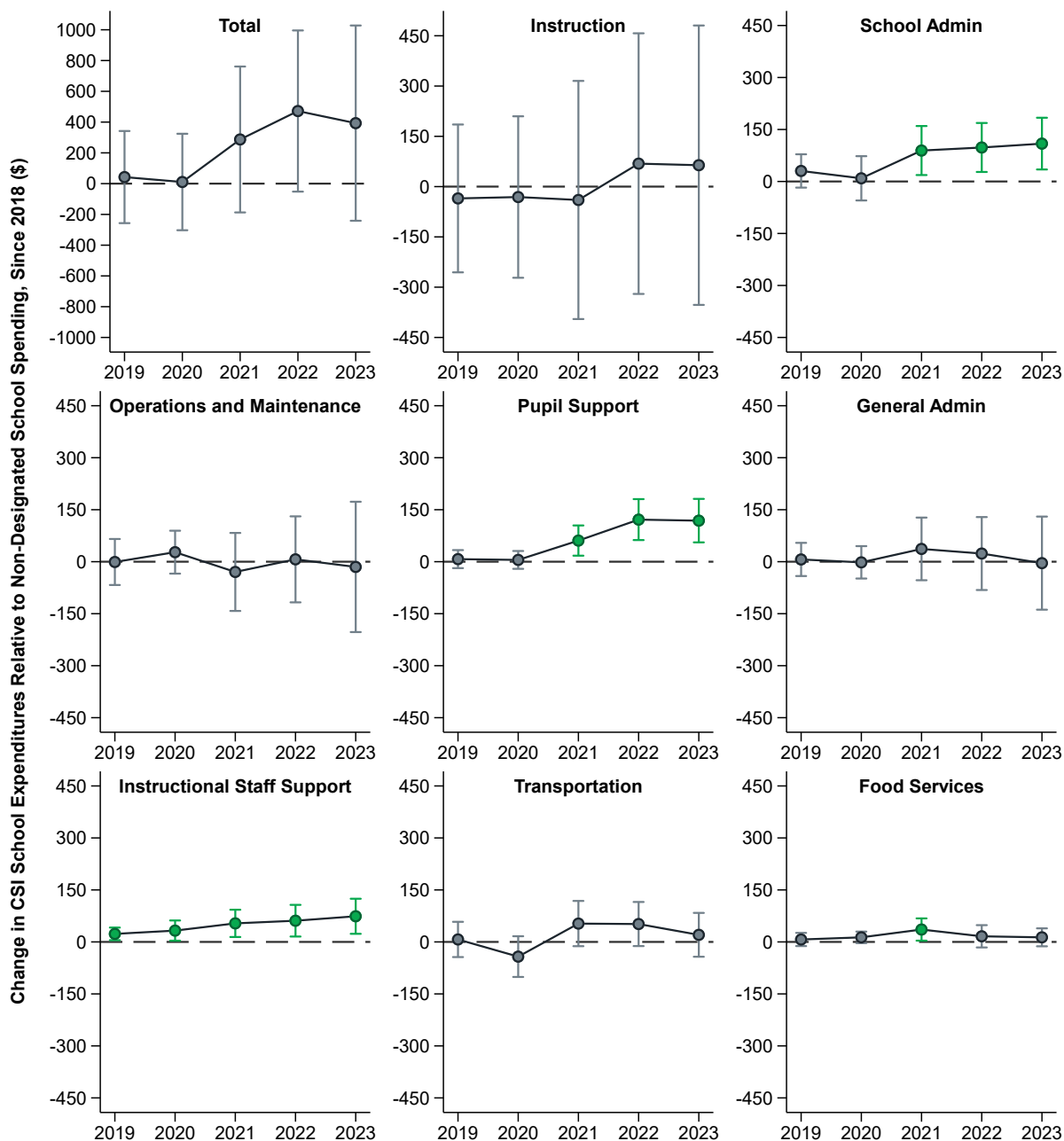
Exhibit 2. Percentage of Schools Receiving 1003(a) Funding and Average Amount of Section 1003(a) Funding for Funded Schools, by Year and 2019 Accountability Designation



Note: Designation groups are based on 2019 accountability designations.

CSI schools exhibit increased spending in school administration, pupil support, and instructional staff support compared to non-designated schools. Overall, CSI schools increased spending by around \$400 per pupil, on average, compared to non-designated schools by 2022 and 2023, although the estimates are not statistically significant (Exhibit 3). Additionally, we found that CSI schools spent significantly more than non-designated schools in three categories: school admin, pupil support, and instructional staff support. These categories capture spending related to school improvement planning and budgeting, improving instruction (e.g., curriculum development, staff training), attendance and family liaison services, and support for students with disabilities. Notably, CSI schools did not spend more than non-designated schools on direct instruction (which consists predominately of teacher compensation).

Exhibit 3. Change in CSI Spending Relative to Non-Designated School Spending, Since 2018



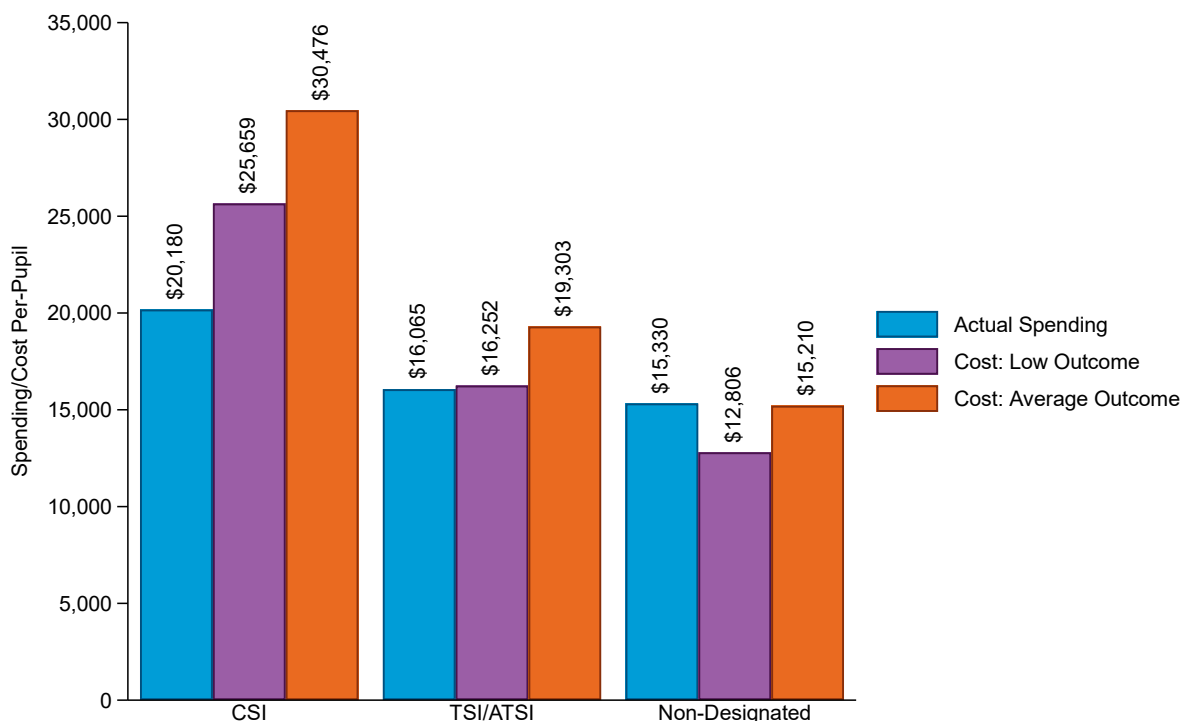
Note. Results are based on a school fixed-effects regression analysis. CSI schools are based on 2019 designations. TSI/ATSI schools are excluded from the analysis. Only schools that were represented in the data for all six years (2018 to 2023) were included in the analysis. The dashed line at 0 represents no change in CSI school spending relative to non-designated school spending, since 2018. Vertical lines represent the 95% confidence interval of the difference. Dots and error bars that are green represent statistically significant results. A category for *Other* spending is not shown, but is included in the regression results shown in Exhibit B1.

The Cost of Meaningful Improvement in CSI Schools Versus Actual Spending (RQ3)

CSI schools require almost \$25,700 per pupil, on average, to reach the low outcome target and almost \$30,500 per pupil, on average, to reach the state average outcome target. This is compared to actual spending of almost \$20,200 per pupil. As such, depending on the outcome target chosen, CSI schools are underfunded by between approximately \$5,500 and \$10,300 per pupil (Exhibit 4). TSI/ATSI schools require just over \$16,300 per pupil to meet the low outcome target and about \$19,300 per pupil to meet the state average outcome target, on average. Actual spending for TSI/ATSI schools is almost \$16,100 per pupil, meaning that they currently spend almost enough to meet the low outcome target, but need require an additional \$3,200 per pupil, on average, to meet the state average outcome target. Despite lower actual spending, non-designated schools already have sufficient spending levels to meet the state average outcome target and spend more than enough to meet the low outcome target.

Differences in the spending needed to meet a target outcome for CSI, TSI/ATSI, and non-designated schools reflect their differences in student need across the three groups of schools. The cost-function model that underlies the cost targets indicates that schools with higher poverty rates, higher percentages of students with disabilities, and English learners need to spend more to reach outcome targets. The cost-function model regression results can be found in Exhibits B2 and B3 in Appendix B.

Exhibit 4. Average Actual Spending Versus the Cost of Achieving a Target Outcome Level, by Accountability Designation (2023)



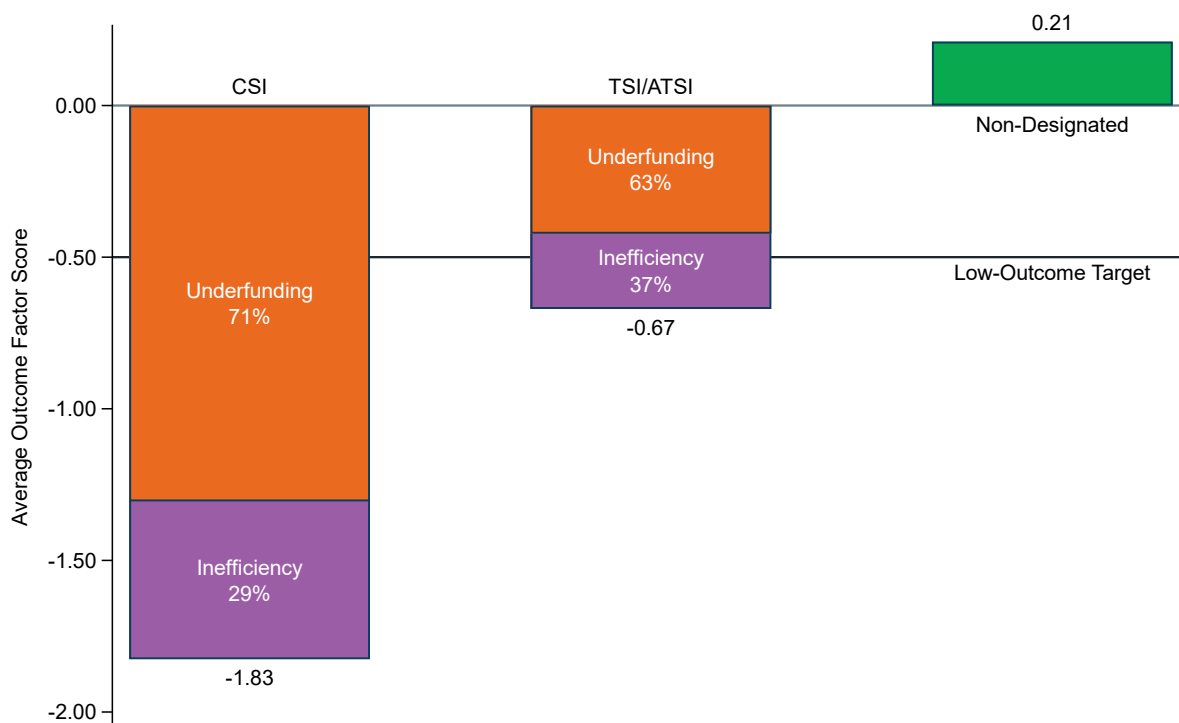
Note: Designations based on 2023 designations. Averages are weighted by school enrollment. The low-outcome target sets a target of 0.5 SDs below the state average based on an aggregate outcome measure consisting of math and ELA test scores, chronic absenteeism, and 4-year graduation rate. This target represents the 21st percentile of non-designated schools in the 2023 school year. Number of CSI Schools = 279. Number of TSI/ATSI Schools = 199. Number of Non-Designated Schools = 2,842.

Spending Efficiency and Inadequacy (RQ4)

CSI and TSI/ATSI schools tend to be both underfunded and inefficient. Underfunding is only part of the reason that CSI and TSI/ATSI schools underperform. They also tend to be inefficient. In other words, after accounting for the level of underfunding and school characteristics, CSI and TSI/ATSI schools both tend to perform below their expected levels of performance. Overall, 80% of CSI school enrollment attends schools with below-average efficiency, compared to about 70% for TSI/ATSI schools and under 50% for non-designated schools (see Exhibit B5). This pattern suggests that Ohio's system of measuring performance and identifying schools in need of improvement is generally identifying an appropriate set of schools that is underperforming when taking into account their existing funding levels and other school characteristics.

Approximately 30% of the outcome gap between CSI schools and the state average can be attributed to inefficiency. Although this represents a sizable portion of the outcome gap, it also means that underfunding accounts for a larger portion of CSI schools' underperformance. If the collective level of efficiency in CSI schools improved to the average, they would still be performing about 1.25 *SDs* below the state average and 0.75 *SDs* below the lower outcome target, on average (Exhibit 5). Nearly 40% of TSI/ATSI school underperformance can be attributed to inefficiency. If TSI/ATSI schools collectively improved efficiency to the statewide average, they would, on average, exceed the low-outcome performance target, but would still perform approximately 0.4 *SDs* below the statewide average outcome level. Non-designated schools already collectively exceed the statewide average outcome target, and therefore, as a group are sufficiently funded and perform at above-average efficiency.

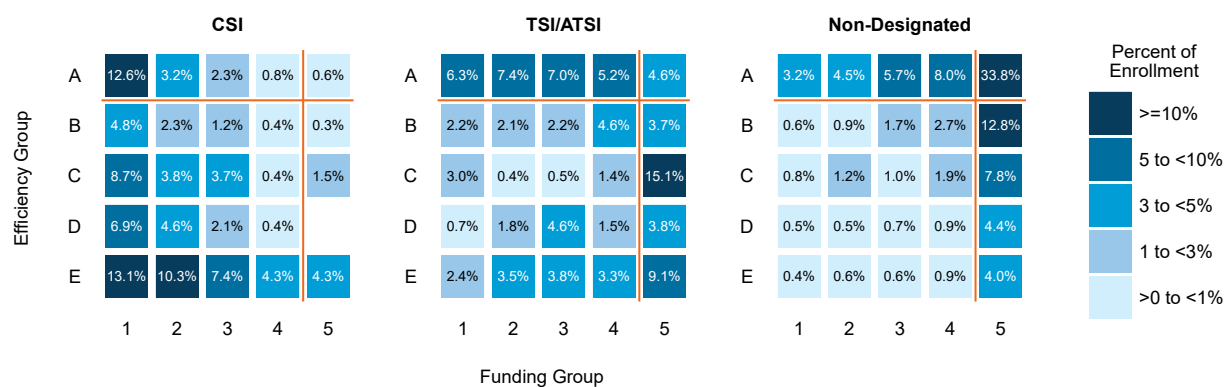
Exhibit 5. Decomposing the Underperformance of Designated Schools, by Accountability Designation (2023)



Note: Averages are weighted by school enrollment. The portion of underperformance attributed to underfunding is the average predicted level of performance, accounting for the funding gap using an average outcome target and other school characteristics. The portion represented by inefficiency is the average difference between the predicted level of performance and the actual level of performance. In other words, the portion represented by inefficiency represents the expected change in performance if schools performed at average levels of efficiency. The statewide average outcome target is represented by an outcome factor score of 0. Number of CSI Schools = 279. Number of TSI/ATSI Schools = 199. Number of Non-Designated Schools = 2,842.

While as a group, CSI schools are both underfunded and inefficient, a sizable portion of CSI schools are efficient (and are simply underfunded) and a portion of CSI schools are not substantially underfunded (and are simply inefficient). As shown in Exhibit 6, almost 13% of CSI schools have above average efficiency (Efficiency Group A) but are substantially underfunded (Funding Group 1). An additional almost 9% of CSI schools are either not underfunded or are only slightly underfunded (Funding Groups 4 and 5) but are very inefficient (Efficiency Group E). In contrast to CSI schools, relatively few TSI/ATSI schools are both underfunded and inefficient and are more often underfunded or inefficient (but not both). Non-designated schools are almost always above average on either funding or efficiency with a third of non-designated school enrollment attending schools that are above average on both dimensions.

Exhibit 6. Percentage of Students Enrolled in Schools by Efficiency and Funding Group, by Accountability Designation (2023)



Note: Because the majority of CSI schools and TSI/ATSI schools are underfunded and/or inefficient, we define our groups to focus on schools that are underfunded (having negative funding gaps) and inefficient (having negative efficiency). As such, efficiency groups are defined as follows, based on their calculated efficiency (the difference between actual and predicted outcomes): A ≥ 0 , B = -0.2 to <0, C = -0.4 to <-0.2, D = -0.6 to <-0.4, E ≤ -0.6 . Funding groups are defined as follows, based on the funding gap (the difference between actual spending and the predicted cost of achieving the average outcome target, measured in SDs of the outcome index measure): 1 = <-\$10,000, 2 = -\$10,000 to <- \$5,000, 3 = -\$5,000 to <- \$2,000, 4 = -\$2,000 to < \$0, 5 $\geq$ \$0. Orange lines represent funding gaps of 0 and efficiency of 0.

Conclusion

Under ESSA, federal accountability has sought to focus improvement efforts on a relatively narrow set of the lowest-performing schools in each state. Paired with provisions in ESSA designed to ensure that additional fiscal resources are distributed to schools identified as needing support and improvement under the accountability system, the goal was to facilitate conditions that would enable the lowest-performing schools to make meaningful improvement. However, limited research thus far indicates that CSI schools are not making meaningful improvement under ESSA (Atchison et al., in press).

One possible reason for a lack of meaningful improvement among CSI schools is a misalignment between the level of need and challenges these schools face and the additional resources they are provided to address those needs. Despite serving substantially higher rates of student in poverty, English learners, and students with disabilities, and having substantially lower student outcomes, CSI schools in Ohio receive only a relatively small amount of additional funding (\$300 to \$400 more per pupil) compared to what would be necessary to meaningfully improve student outcomes in these schools.¹ We estimate that, collectively, CSI schools in the state would need to spend about \$10,000 more per pupil to meet a statewide average outcome level or about \$5,500 more per pupil to achieve a lower outcome level that would still represent meaningful improvement for these schools.

Our analyses also demonstrate that both underfunding and inefficient use of funding contribute to the low performance of CSI schools in Ohio and should be addressed in efforts to improve. However, we contend that attempting to address inefficiency alone without additional resources will only get CSI schools in the state so far in terms of demonstrating meaningful improvement. Even if CSI schools performed at average levels of efficiency, this would only account for less than 30% of the gap between their current performance and statewide average outcome levels. Without additional resources it is likely that these schools will remain among the lowest performing group of schools.

Understanding the extent to which each school's underperformance is an issue of underfunding versus inefficiency could help state and local education agencies tailor the types of support they provide to individual schools. Ohio's CSI schools generally fall into three categories: (a) both underfunded and inefficient, (b) underfunded but relatively efficient, and (c) inefficient but only slightly or not at all underfunded. Addressing inefficiency may involve additional monitoring of

¹ These findings are consistent with a national analysis by Blair et al. (2024), who found that school improvement funding typically amounted to between \$100 and \$500 per pupil and additional spending in CSI schools amounted to just over \$300 per pupil.

progress on student outcomes as well as reviews or audits of resource use and the alignment of resource use with needs. In addition, addressing inefficiency may involve more direct provision of technical assistance and short-term investments in building the capacity of staff through professional development. Underfunding, by contrast, suggests a misalignment between the level of services that schools are able to provide and the needs of students. For most CSI schools, appropriately addressing the needs of their students requires additional resources.

In addition to the findings we present with respect to the underfunding and inefficiency of schools identified through Ohio's accountability system, we present a framework to evaluate the level of funding required by low-performing schools to make meaningful improvement and whether these schools are efficient in their use their existing level of resources. Rigorous estimation of underfunding and inefficiency at the school level can provide valuable information to policymakers and practitioners that could facilitate better targeting of supports and resources to the schools that need them the most.

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